CLAIMS:

1. A clathrate compound represented by the following composition formula (1):

Composition formula (1) Ba₈Au_aGe_{46-a}

$$(16/3 \le a \le 6)$$
.

2. A clathrate compound represented by the following composition formula (2):

Composition formula (2) Ba₈Au_bGa_cGe_{46-b-c}

$$(5 \le b < 16/3, c = 16-3b).$$

3. A clathrate compound represented by the following composition formula (3):

Composition formula (3) Ba₈Au_dGa_eGe_{46-d-e}

$$(0 \le d < 5, e = 16-3d).$$

4. A clathrate compound represented by the following composition formula (4):

Composition formula (4) $Ba_8Au_fGa_{6-f}Ge_{40}$ (0 < f < 6).

5. A clathrate compound represented by the following composition formula (5):

Composition formula (5) $Ba_8Pt_gGe_{46-g}$ (4 < g < 6).

6. A clathrate compound represented by the following composition formula (6):

Composition formula (6) $Ba_8Pd_hGe_{46-h}$ (5 < h < 6).

7. A clathrate compound represented by the following composition formula (7):

Composition formula (7) $Ba_8Pd_iGa_jGe_{46-i-j}$ $(0 \le i \le 4, j = 16-4i).$

8. A clathrate compound represented by the following composition formula (8):

Composition formula (8) Ba₈A_kGa₁Si_{46-k-1}

$$(0 \le k \le 4, 1 = 16-4k)$$

wherein A in Composition formula (8) represents Pd or Pt.

9. A clathrate compound represented by the following composition formula (9):

Composition formula (9) Ba₈E_mGa_{6-m}Ge₄₀

wherein E in Composition formula (9) represents Cu or Ag.

10. A clathrate compound represented by the following composition formula (10):

Composition formula (10)Ba₈G_nGa_{6-n}Ge₄₀ (0 < n \leq 5) wherein G in Composition formula (10) represents Cu or Ag.

11. A clathrate compound represented by the following composition formula (11):

Composition formula (11)Ba₈J₀Ga_pGe_{46-0-p}

$$(0 < o < 16/3, p = 16-30)$$

wherein J in Composition formula (11) represents Cu or Ag.

- 12. A thermoelectric conversion element comprising a sintered body of the clathrate compound of claim 1.
- 13. A thermoelectric conversion element comprising a sintered body of the clathrate compound of claim 2.
- 14. A thermoelectric conversion element comprising a sintered body of the clathrate compound of claim 3.
- 15. A thermoelectric conversion element comprising a sintered body of the clathrate compound of claim 4.
- 16. A thermoelectric conversion element comprising a sintered body of the clathrate compound of claim 5.
- 17. A thermoelectric conversion element comprising a sintered body of the clathrate compound of claim 6.

18. A thermoelectric conversion element comprising a sintered body of the clathrate compound of claim 7.

- 19. A thermoelectric conversion element comprising a sintered body of the clathrate compound of claim 8.
- 20. A thermoelectric conversion element comprising a sintered body of the clathrate compound of claim 9.
- 21. A thermoelectric conversion element comprising a sintered body of the clathrate compound of claim 10.
- 22. A thermoelectric conversion element comprising a sintered body of the clathrate compound of claim 11.
- 23. A method for producing a thermoelectric conversion element comprising a sintered body of a clathrate compound whose constituent atoms include Ba and Ge, the method comprising:

melting elements which are to constitute the clathrate compound so as to synthesize the clathrate compound;

heat-treating the synthesized clathrate compound at 650 to 900 °C for 50 to 250 hours;

forming particles from the heat-treated clathrate compound; and

sintering the particles.